List of Questions and Answers for Storage Vessels

Storage Vessels

The emissions requirements for storage vessels are found in §63.1314 and reference the provisions for storage vessels in 40 C.F.R. Part 63 Subpart G. The first step in determining the requirements for the storage vessel is determining if it is a Group 1 storage vessel or a Group 2 storage vessel.

A Group 1 Storage Vessel is defined as a vessel that meets the following criteria:

What is a Group 1 Storage Vessel?

For an <u>existing</u> Storage Vessel: (Found in Table 2 and 3 of the rule)

Vessel must have a capacity of at least 75 cubic meters. Vessels with a capacity $75 m³ and <151 m³ must also have a vapor pressure greater than $13.1 kPa. Vessels with a capacity $ 151 m³ must have a vapor pressure $ 5.2 kPa. All vapor pressures are the maximum true vapor pressure at storage temperature.

The storage vessels at facilities that make certain thermoplastics and store certain chemicals that meet the following requirements are also considered Group 1 storage vessels.

Thermoplastic	Chemical	Vessel Capacity (m³)	Vapor Pressure (kPa)
ASA/AMSAN	Styrene/acrylonitrile mixture	$3.78	$0.47
	Acrylonitrile	$75.7	$1.62
Polystyrene, continuous process	All chemicals	$38 and <75.7 $75.7	$14.2 $1.9
Nitrile	Acrylonitrile	$13.25	$1.8

For an <u>new</u> Storage Vessel: (Found in Table 4 and 5 of the rule)

Vessel must have a capacity of at least 38 cubic meters. Vessels with a capacity $38 m³ and <151 m³ must also have a vapor pressure greater than $13.1 kPa. Vessels with a capacity $ 151 m³ must have a vapor pressure $ 0.7 kPa. All vapor pressures are the maximum true vapor pressure at storage temperature.

The storage vessels at facilities that make certain thermoplastics and store certain chemicals that meet the following requirements are also considered Group 1 storage vessels.

Thermoplastic	Chemical	Vessel Capacity (m^3)	Vapor Pressure (kPa)
ASA/AMSAN	Styrene/acrylonitrile mixture	$3.78	$ 0.47
	Acrylonitrile	$75.7	$1.62
SAN, continuous	All chemicals	$2271	0.5# vp < 0.7
		<151	$ 10
		$ 151	$ 0.7
Nitrile	Acrylonitrile	$13.25	$ 1.8
Polystyrene, continuous processes	All chemicals	$19.6 and <45.4	$7.48
		$45.4 and <109.8	$0.61
		$109.8	$0.53
ABS, continuous mass process	Styrene	$45.43	$0.078
	All other chemicals	$38 and <45.43	$13.1
		$45.43	$0.53

What is a Group 2 Storage Vessel?
A Group 2 storage vessel is any vessel that is not considered a Group 1 vessel.

What are the control and emission requirements for Group 2 Streams?

Group 2 vessels only recordkeeping and reporting requirements.

What are the control and emission requirements for Group 1 Streams? (§63.119)

§63.119(a)(1) For all Group 1 storage vessels that contain a liquid for which the HAP(s) have a maximum true vapor pressure less than 76.6 kPa, the owner shall control the unit by doing one of the following options:

Operate and maintain a fixed roof with an internal floating roof
Operate and maintain an external floating roof
Operate and maintain an external floating room converted to an internal floating roof
Operate and maintain a closed vent system with a control device, or

Operate and maintain and closed vent system with emissions routed to a process or fuel gas system.

§63.119(a)(2) For all Group 1 storage vessels that contain a liquid for which the HAP(s) have a maximum true vapor pressure $ 76.6 kPa, the owner shall control the unit by doing one of the following options:

Operate and maintain a closed vent system with a control device, or
Operate and maintain and closed vent system with emissions routed to a process or fuel gas system

So I chose to operate and maintain a fixed roof with an internal floating roof, what are my control and emission requirements? (§63.119 (b)(1-6))

< The internal floating roof shall be floating on the liquid source at all times except for the following (during which it must be supported by leg supports)

- During the initial fill
- After the vessel has been completely emptied and degassed
- When the vessel is completely emptied and degassed

< When the floating roof is resting on the leg suppors, the process of filling, emptying or refilling is continuous and shall be completed as soon as practical.

< Each internal roof is required to have a closure device between the wall of the storage vessel and the roof edge. Below are the options for the closure device

S A liquid-mounted seal
S A metallic shoe seal
S Two seals mounted one above the other so that each forms a continuous closure that completely covers the space between the wall of the storage vessel and the edge of the internal floating roof. The lower seal may be vapor-mounted, but both must be continuous seals.

GOOD NEWS: If you have an internal floating roof that was equipped with a vapor mounted seal as of March 29, 1995 you don't need to comply with one of the seal options until, the earliest of the following occurrence.

- The next time the storage vessel is emptied and degassed
- No later than September 12, 2006

< Automatic bleeder vents need to be closed at all times when the roof is floating, except when the roof is being floated off or is being landed on roof leg supports.

< Each internal roof must meet the following specifications

- **S** Each opening in a non-contact internal floating roof (except for automatic bleeder vents and rim space vents) is to provide a projection below the liquid surface.

- **S** Each opening in the internal floating roof (except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains) shall be covered with a cover equipped with a gasket or lid equipped with a gasket.

- **S** Each penetration of the internal floating roof for the purposes of sampling shall be a sampling well. Each sample well shall have a slit fabric cover that covers at least 90% of the opening.

- **S** Each automatic bleeder vent shall be gasketed

- **S** Each rim space vent shall be gasketed

- **S** Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.

- **S** Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or gasketed sliding cover.

If the internal floating roof does not meet any one of the above specifications as of March 29, 1995 the requirements to meet these specifications do not apply until the earlier of the following occasions: the storage vessel is emptied and degassed or no later than September 12, 2006.

< Each cover or lid on any opening in the internal floating roof shall be closed (i.e. no visible gaps), except when the cover or lid must be open for access. Cover on each access hatch and each gauge float well shall be bolted or fastened so as to be air tight when they are closed. Rim space vents are to be set to open only when the internal floating roof is not floating or when the pressure beneath the rim seal exceeds the manufacturer's recommended setting.

So I chose to operate and maintain an external floating roof, what are my emission and control requirements?:(§63.119(c)(1-4))

< Each external floating roof shall be equipped with a closure device between the wall of the storage vessel and the roof edge.

- **S** The closure device must consist of two seals, the lower seal is referred to as the primary seal , the upper seal is referred to as the secondary seal.

- **S** The primary seal shall be either a metallic shoe seal or a liquid-mounted seal.

    * If a primary seal of a metallic shoe seal or liquid-mounted seal was installed by March 29, 1995 you are not required to install a secondary seal until the earlier of the following occasions: the storage vessel is emptied and degassed or no later than September 12, 2006.

    * If the external floating roof storage vessel is equipped with a vapor mounted primary and a secondary seal as of Marcy 29, 1995 the requirement for primary seal being a metallic shoe seal or liquid mounted seal doe not apply until the earlier of the following occasions: the storage vessel is emptied and degassed or no later than September 12, 2006.

< Each external roof must meet the following specifications

- Each opening in the non contact external floating roof (except for automatic bleeder vents and rim space vents) shall provide a projection below the liquid surface.

    * If the external roof tank does not meet the above requirement as of March 29, 1995, the requirement for providing these projects do not apply until the earlier of the following accessions, the next time the vessel is emptied and degassed or no later than September 12, 2006.

- Each opening in the roof (except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves) is to be equipped with a gasketed cover, seal or lid which is to be maintained in a closed position (i.e. no visible gaps) at all times except when the cover or lid must be open for access. Covers on each access hatch and each gauge float well must be bolted or fastened so as to be air-tight when they are closed.

- Automatic bleeder vents are to be closed at all times when the roof is floating, except, when the roof is being floated off or is being landed on the roof leg supports.

- Rim space vents are to be set to open only when the roof is being floated off the roof leg supports or when the pressure beneath the rim seal exceeds the manufacturer's recommended setting.

- **S** Automatic bleeder vents and rim space vents are to be gasketed

- **S** Each roof drain that empties into the stored liquid is to be provided with a slotted membrane fabric cover that covers at least 90% of the area of the

opening.

- **S** Each unslotted guide pole well shall have a gasketed sliding cover or a flexible fabric sleeve seal.

- **S** Each unslotted guide pole shall have on the end of the pole, a gasketed cap which is closed at all times except when gauging the liquid level or taking liquid samples.

- **S** Each slotted guide pole well shall have a gasketed sliding cover or a flexible fabric sleeve seal.

- **S** Each slotted guide pole shall have a gasketed flat or other device which closes off the liquid surface from the atmosphere

- **S** Each gauge hatch/sample well shall have a gasket cover which is closed at all times except when the hatch or well must be open for access.

< The external floating roof shall be floating on the liquid surface at all times except when the floating roof must be supported by the leg supports during the following periods.

- **S** initial fill
- **S** after the vessel has been completely emptied and degassd
- **S** when the vessel is completely emptied before being subsequently refilled.

< When the floating roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be accomplished as soon as practical.

So I chose to operate and maintain an external floating roof converted to an internal floating roof, what are my emission and control requirements? §63.119(d)(1-2)

< Comply with the following requirements for an internal floating roof vessel:

- **S** The internal floating roof shall be floating on the liquid source at all times except for the following (during which it must be supported by leg supports)

  - C During the initial fill
  - C After the vessel has been completely emptied and degassed
  - C When the vessel is completely emptied and degassed

- **S** When the floating roof is resting on the leg supports, the process of filling, emptying or refilling is continuous and shall be completed as soon as practical.

- **S** Each internal roof is required to have a closure device between the wall of the storage vessel and the roof edge. Below are the options for the closure device

C A liquid-mounted seal
C A metallic shoe seal
C Two seals mounted one above the other so that each forms a continuous closure that completely covers the space between the wall of the storage vessel and the edge of the internal floating roof. The lower seal may be vapor-mounted, but both must be continuous seals.

* If you have an internal floating roof that was equipped with a vapor mounted seal as of March 29, 1995 you don't need to comply with one of the seal options until, the earliest of the following occurrence.

S The next time the storage vessel is emptied and degassed
S No later than September 12, 2006

< Comply with the following requirements for deck fittings that are specified for external floating roof vessels

Each external roof must meet the following specifications

- Each opening in the non contact external floating roof (except for automatic bleeder vents and rim space vents) shall provide a projection below the liquid surface.

  * If the external roof tank does not meet the above requirements as of March 29, 1995, the requirement for providing these projects do not apply until the earlier of the following occasions, the next time the vessel is emptied and degassed or no later than September 12, 2006.

S Each opening in the roof (except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves) is to be equipped with a gasketed cover, seal or lid which is to be maintained in a closed position (i.e. no visible gaps) at all times except when the cover or lid must be open for access. Covers on each access hatch and each gauge float well must be bolted or fastened so as to be air-tight when they are closed.

- Automatic bleeder vents are to be closed at all times when the roof is floating, except, when the roof is being floated off or is being landed on the roof leg supports.

- Rim space vents are to be set to open only when the roof is being floated off the roof leg supports or when the pressure beneath the rim seal exceeds the manufacturer's recommended setting.

- **S** Automatic bleeder vents and rim space vents are to be gasketed

- **S** Each roof drain that empties into the stored liquid is to be provided with a slotted membrane fabric cover that covers at least 90% of the area of the opening.

- **S** Each unslotted guide pole well shall have a gasketed sliding cover or a flexible fabric sleeve seal.

- **S** Each unslotted guide pole shall have on the end of the pole, a gasketed cap which is closed at all times except when gauging the liquid level or taking liquid samples.

- **S** Each slotted guide pole well shall have a gasketed sliding cover or a flexible fabric sleeve seal.

- **S** Each slotted guide pole shall have a gasketed flat or other device which closes off the liquid surface from the atmosphere

- **S** Each gauge hatch/sample well shall have a gasket cover which is closed at all times except when the hatch or well must be open for access.

So I chose to operate and maintain a closed vent system with a control device, what are my emission and control requirements? (§63.119(e)(1-6)

- < The owner shall be designated and operate to reduce inlet emissions of total organic HAP by 95% or greater. If a flare is used as the control device, it shall meet the specifications described in the general control device requirements of §63.11(b).

- < However, if the owner can demonstrate that a control device installed before March 29, 1995 is designed to reduce total organic HAP by $90% but <95%, then the control device is required to reduce inlet concentration of HAP by 90% or greater.

- < Periods of planned routine maintenance of the control device shall not exceed 240 hours per year.

- < The control efficiency requirements do not apply during periods of planned routine maintenance.

- < The control efficiency requirements do not apply during a control system malfunction

- < To achieve the required control efficiency: The company can use a combination of control devices.

So I chose to operate and maintain a closed vent system with emissions routed to a process or

fuel gas system, what are my emission and control requirements? (§63.119)(f)(1-3)

< The owner shall comply with all of the following provisions that is applicable to their system.

- **S** If emissions are routed to a fuel gas system, there is not requirement to conduct a performance test or design evaluation.
- **S** If emissions are routed to a process, the organic hazardous air pollutants in the emissions shall predominately meet one of, or a combination of the following ends. In addition, the owner needs to comply with a compliance demonstration (§63.120 (f))
  - C Recycle and/or consumed in the same manner as a material that fulfills the same function in that process.
  - C Transformed by chemical reaction into materials that are not organic hazardous air pollutants.
  - C Incorporated into a product; and/ or
  - C Recovered
- **S** If conveyed by a system other than hard-piping, any conveyance system shall comply with the Leak Detection and Repair Program (LDAR).
- **S** The fuel gas system or process shall be operating at all times when organic hazardous air pollutants are routed to it. When by-passes occurs, certain recordkeeping requirements shall be followed. Bypassing is allowed when the operator complies with one or more of the following conditions.
  - C The liquid level in the storage vessel is not increased
  - C The emissions are routed through a closed-vent sytem to a control device complying with the 95% or 90% control efficiency stated for operating a closed vent system with a control device.
  - C The total aggregate amount of time during which the time when the emissions by-pass the fuel gas system or process during the calendar year without being routed to a control device, for all reasons (except start-ups /shutdowns/ malfunctions or product change overs of flexible operation units and periods when the storage vessel has been emptied and degassed), does not exceed 240 hours.

So I chose to operate and maintain a fixed roof with an internal floating roof, what are my

monitoring requirements? (§63.120(a)(1-7)

< Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service),according to the following schedule.

- **S** For single seal systems:
  - C Inspect the internal floating roof and the seal through manholes and roof hatches on the fixed roof at least once every 12 months after initial fill, or at least once every 12 months after the compliance date. (see compliance dates)
  - C Visual inspect the internal floating roof, the seal, gaskets, slotted membranes, and sleeve seals (if any) each time the storage vessel is emptied and degassed, and at least once every 10 years after the compliance date. (see compliance dates)
- **S** For double seal systems: (pick one of two options)
  - C The owner or operator shall visually inspect the internal floating roof, the primary seal, the secondary seal, gaskets, slotted membranes, and sleeve seals (if any) each time the storage vessel is emptied and degassed and at least once every 5 years after the compliance date. (see compliance dates)
  - C The owner or operator shall visually inspect the internal floating roof and the secondary seal through manholes and roof hatches on the fixed roof at least once every 12 months after initial fill, or at least once every 12 months after the compliance date. (see compliance dates). In addition, visually inspect the internal floating roof, the primary seal, the secondary seal, gaskets, slotted membranes, and sleeve seals (if any) each time the vessel is emptied and degassed and at least once every 10 years after the compliance dates. (see compliance dates)

< If any of the following situations are found during an annual inspection the operator must repair the items or empty and remove the storage vessel from service within 45 calendar days.

- **S** the internal floating roof is not resting on the surface of the liquid inside the storage vessel and not resting on the leg supports
- **S** there is liquid on the floating roof
- **S** the seal is detached

- **S** there are holes or tears in the seal fabric
- **S** there is visible gaps between the seal and the wall of the storage vessel

If a failure is one that cannot be repaired in 45 days AND the storage vessel cannot be emptied with 45 calendar days, the owner can use up to 2 extensions of 30 calendar days each. If the owner chooses to utilize an extension, the following documentation must be kept. The document should include a description of the failure, shall document that alternative storage capacity is unavailable, and shall specify a schedule of actions that will ensure that the control equipment will be repaired or that the vessel shall be emptied as soon as practical.

< For the inspections that are done when a storage vessel is emptied and degassed the Administrator must be notified in writing at least 30 days prior to the refilling, so that the Administrator has to opportunity to have an observer present if he or she desires.

< For the inspections that are unplanned and the 30 day notification cannot be met, the owner or operator must notify the Administrator at least 7 calendar days prior to the refilling of the storage vessel. The notification can be made by phone but must be followed by a write notification explaining why the inspection was unplanned. Alternatively the Administrator can be notified by writing, so long as it is received 7 calendar days before the refilling occurs.

< If any of the following things are noted during the inspections done when the storage vessel is emptied and degassed, they must be repaired prior to refilling of the storage vessel with organic HAP.

- **S** If the internal roof has defects
- **S** the primary seal has holes, tears or other openings in the seal or seal fabric
- **S** the secondary seal has holes, tears or other openings in the seal or seal fabric
- **S** the gaskets no longer close off the liquid surface from the atmosphere
- **S** the slotted membrane has more than 10% open area.

So I chose to operate and Maintain an External Roof, what are my monitoring requirements? (§63.120)(b)(1-10)

< The operator shall determine the gap areas and maximum gap widths between the primary seal and the wall of the storage vessel, and the secondary seal and the storage vessel according to the following schedule.

- **S** For an external floating roof vessel equipped with primary and secondary seals: measurements for the primary seal should be performed during the hydrostatic testing of the vessel or by the compliance date (see compliance

dates), which ever is later, and at least once every five years thereafter.

- For an external floating roof vessel equipped with primary and secondary seals: measurements for the secondary seal should be performed by the compliance date(see compliance dates) and at least once every year thereafter.

- For an external floating roof vessel equipped with a liquid-mounted or metallic shoe primary seal and without a secondary seal, measurements shall be made by the compliance date (see compliance dates), and at least once per year after, until the secondary seal is installed. After the secondary seal is installed the gap measurements for the primary and secondary seal must be made within 90 days and thereafter the primary seal shall be inspected at least once every five years and the secondary seal shall be inspected at least once every year.

- If the storage vessel stops storing organic HAP for a period of one year or more, or if the maximum true vapor pressure of the total organic HAP's in the storage vessel falls below the values specified in for a Group 1 storage vessel for a period of one year or more, measurements of the gaps between the vessel wall and the primary seal shall be performed within 90 calendar days of the vessel being refueled with organic HAP.

< Methods on how to determine the gap widths and the gap areas in the primary and secondary seals (seal gaps) individually by the following procedures.

- If there are any seal gaps, they should be measured at one or more floating roof levels when the roof is not resting on the roof leg supports.

- If there are any seal gaps, they should be measured around the entire circumference of the vessel in each p lace where a 0.32 cm (1/8 inch) diameter uniform probe passes freely between the seal and the wall of the storage vessel. The circumferential distance of each such location should also be measured. [*Freely*: no forcing or binding against the seal]

- The total surface area of each gap shall be determined by using probes of various widths to measure accurately the actual distance from the vessel wall to the seal and multiplying each such width by its respective circumferential distance.

< The accumulated area of gaps between the vessel wall and the primary seal shall not exceed 212 square centimeters per meter of vessel diameter and the width of any portion of the gap shall not exceed 3.81 centimeters.

- The operator shall determine the accumulated area of gaps by adding up the

gap surface area of each gap location for the primary seal and divide the sum by the nominal diameter of the vessel.

< The accumulated area of gaps between the vessel wall and the secondary seal shall not exceed 21.2 square centimeters per meter of vessel diameter and the width of any portion of the gap shall not exceed 1.27 centimeters.

- **S** The operator shall determine the accumulate area of gaps by adding up the gap surface area of each gap location for the secondary seal and divide by the sum of the nominal diameter of the vessel
- **S** These seal gap requirements can be exceed only during the required measurement of the primary seal gaps.

< Additional requirements for the primary seal

- **S** When a metallic shoe seal is used, one end shall extend into the stored liquid and the other end should extend a minimum vertical distance of 61 cm above the stored liquid surface.
- **S** There should be no holes, tears, or other openings in the shoe, seal fabric, or seal envelope.

< Additional requirements for the secondary seal

- **S** The secondary seal shall be installed above the primary seal so that it completely covers the space between the roof edge and the vessel wall except for the allowed gap space and during measurement of the primary seal gap.
- **S** There should be no holes, tears, or other openings in the shoe, seal fabric, or seal envelope.

< If the owner or operator determines that it is unsafe, because the floating roof appears to be structurally unsound and poses an imminent or potential danger to inspecting personnel, to perform the seal gap measurements or to inspect the vessel to determine compliance with the additional requirements for the primary and secondary seal one of the following procedures must be followed.

- **S** The owner or operator shall measure the seal gaps or inspect the vessel no later than 30 calendar days after the roof is determined unsafe, or
- **S** The owner or operator shall empty and remove the storage vessel from service no later than 45 calendar days after determining that the roof is unsafe. If the vessel cannot be emptied within 45 calendar days, the owner or operator may utilize up to 2 extensions of up to 30 calendar days each. If an owner

chooses to use an extension they must keep the following records: why it was unsafe to perform the inspection or seal gap measurements, document that an alternative storage capacity is unavailable, and shall specify a schedule of actions that will ensure that the vessel will be emptied as soon as practical.

< The owner shall repair conditions that do not meet the following requirements: primary and secondary seal gap area, any holes, tears or openings in the primary and secondary shoe, seal fabric, or seal envelope no later than 45 calendar days after identification of the problem, or the vessel shall be emptied and removed from service no later than 45 calendar days after identification. If the conditions cannot be repaired within 45 days and the vessel cannot be emptied within 45 days the owner or operator may utilize up to 2 extensions of up to 30 calendar days each. If an owner chooses to use an extension they must keep the following records: why it was unsafe to perform the inspection or seal gap measurements, document that an alternative storage capacity is unavailable, and shall specify a schedule of actions that will ensure that the vessel will be emptied as soon as practical.

< For the inspections that are done when a storage vessel is emptied and degassed the Administrator must be notified in writing at least 30 days prior to the refilling, so that the Administrator has to opportunity to have an observer present if he or she desires.

< For the inspections that are unplanned and the 30 day notification cannot be met, the owner or operator must notify the Administrator at least 7 calendar days prior to the refilling of the storage vessel. The notification can be made by phone but must be followed by a write notification explaining why the inspection was unplanned. Alternatively the Administrator can be notified by writing, so long as it is received 7 calendar days before the refilling occurs.

So I chose to operate and maintain an external floating roof converted to an internal floating roof, what are my monitoring requirements? (§63.120(c))

< Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service),according to the following schedule.

S For single seal systems:

C Inspect the internal floating roof and the seal through manholes and roof hatches on the fixed roof at least once every 12 months after initial fill, or at least once every 12 months after the compliance date. (see compliance dates)

C Visual inspect the interal floating roof, the seal, gaskets, slotted membranes, and sleeve seals (if any) each time the storage vessel is emptied and degassed, and at least once every 10 years after the compliance date. (see compliance dates)

S For double seal systems: (pick one of two options)

- C The owner or operator shall visually inspect the internal floating roof, the primary seal, the secondary seal, gaskets, slotted membranes, and sleeve seals (if any) each time the storage vessel is emptied and degassed and at least once every 5 years after the compliance date. (see compliance dates)

- C The owner or operator shall visually inspect the internal floating roof and the secondary seal through manholes and roof hatches on the fixed roof at least once every 12 months after initial fill, or at least once every 12 months after the compliance date. (see compliance dates). In addition, visually inspect the internal floating roof, the primary seal, the secondary seal, gaskets, slotted membranes, and sleeve seals (if any) each time the vessel is emptied and degassed and at least once every 10 years after the compliance dates. (see compliance dates)

< If any of the following situations are found during an annual inspection the operator must repair the items or empty and remove the storage vessel from service within 45 calendar days.

- **S** the internal floating roof is not resting on the surface of the liquid inside the storage vessel and not resting on the leg supports

- **S** there is liquid on the floating roof

- **S** the seal is detached

- **S** there are holes or tears in the seal fabric

- **S** there is visible gaps between the seal and the wall of the storage vessel

If a failure is one that cannot be repaired in 45 days AND the storage vessel cannot be emptied with 45 calendar days, the owner can use up to 2 extensions of 30 calendar days each. If the owner chooses to utilize an extension, the following documentation must be kept. The document should include a description of the failure, shall document that alternative storage capacity is unavailable, and shall specify a schedule of actions that will ensure that the control equipment will be repaired or that the vessel shall be emptied as soon as practical.

< For the inspections that are done when a storage vessel is emptied and degassed the Administrator must be notified in writing at least 30 days prior to the refilling, so that the Administrator has to opportunity to have an observer present if he or she desires.

< For the inspections that are unplanned and the 30 day notification cannot be met, the owner or operator must notify the Administrator at least 7 calendar days prior to the refilling of the storage vessel. The notification can be made by phone but must be followed by a write

notification explaining why the inspection was unplanned. Alternatively the Administrator can be notified by writing, so long as it is received 7 calendar days before the refilling occurs.

< If any of the following things are noted during the inspections done when the storage vessel is emptied and degassed, they must be repaired prior to refilling of the storage vessel with organic HAP.

- **S** If the internal roof has defects
- **S** the primary seal has holes, tears or other openings in the seal or seal fabric
- **S** the secondary seal has holes, tears or other openings in the seal or seal fabric
- **S** the gaskets no longer close off the liquid surface from the atmosphere
- **S** the slotted membrane has more than 10% open area.

So I chose to operate and maintain a closed vent system with a control device, what are my monitoring requirements? (§63.120(d)(1-8)

< To demonstrate compliance for a closed vent system with a control device other than a flare, the following elements are necessary.

- **S** The owner or operator shall either prepare a design evaluation or a submit the results of a performance test.
  - < Design Evaluation shall include documentation that the control device being used achieves the required control efficiency during resonably expected maximum fill rate. This document should include a description of the gas stream which enters the control device, including the flow and organic HAP content under varying liquid level conditions, and the information specified below.
    - **S** If the control device receives vapors, gases or liquids, other than fuels, from emission points other than storage vessels subject to this subpart, the efficiency demonstration is to include consideration of all vapors, gases, and liquids, other than fuels, received by the control device.
    - **S** If an enclosed combustion device with a minimum residence time of 0.5 seconds and a minimum temperature of 760 C is used to meet the control requirements, of 90 or 95% control, then documentation that those conditions exist are

sufficient to meet the requirements for the design evaluation.

- **S** For thermal incinerators that do not have a minimum residence time of 0.5 seconds and a minimum temperature of 760 C, the design evaluation shall include the auto-ignition temperature of the organic HAP, the flow rate of the organic HAP emission stream, the combustion temperature, and the residence time at the combustion temperature.

- **S** For carbon absorbers, the design evaluation shall include the affinity of the organic HAP vapors for carbon, the amount of carbon in each bed, the number of beds, the humidity of the feed gases, the temperature of the feed gases, the flow rate of the organic HAP emission stream, the desorption schedule, the regeneration stream pressure or temperature, and the flow rate of the regeneration stream. For vacuum desorption, pressure drop shall be included.

- **S** For condensers, the design evaluation shall include the final temperature of the organic HAP vapors, the type of condenser, and the design flow rate of the organic HAP emission stream.

< Performance test requirements:

- **S** The performance test demonstrates that the control device achieves greater than or equal to the required control efficiency of 90 or 95%.

- **S** The performance test must be submitted as part of the Notice of Compliance Status.

For Group 1 Vessels, what must my Notification of Compliance Status contain? (63.120)

In general the following must be included:

A description of the parameter or parameters to be monitored to ensure that the control device is being properly operated and maintained, an explanation of the parameter (or parameters) and the frequency with which monitoring will be performed

If the owner or operator has chosen to do a design analysis, all the information required for the design analysis must be submitted.

If the owner or operator has chosen to conduct a performance test the owner or operator must identify the storage vessel and control device for which the performance test will submitted and identification of the emission point(s) that share the control device with the storage vessel and for which the performance test will be conducted. Results of the performance test must be submitted.

For Group 1 & 2 Vessels what general records do I need to keep? (63.123)

Keep readily accessible records showing the dimension of th storage vessels and an analysis showing the capacity of the storage vessels. For Group 1 vessels, also keep records of all seal gap measurements taken (date and data acquired), parameter monitoring records for control devices, record of planned routine maintenance, and for any bypasses, why a bypass was necessary, date of bypass and duration. In general, you need to keep records of all required tasks identified in the control, emissions and monitoring requirements.

For Group 1 & 2 Vessels what general reporting do I need to do? (63.122)

Submit the notification of compliance status and semi-annual reports. The notification of compliance status should identify the group status for each of the vessels and what associated control will be used. The periodic report should identify when all inspections were done on the Group 1 storage vessels and any failures that were identified and when they were repaired. It should also include any instances when monitoring parameters for control devices are outside of established norms and causes of such incidents, when bypass vents are used, and for flares, when pilot lights are out. For any seal gap measurements, it should identify when measurements were taken and results of the measurements.